

Sunnie H.N. Lim

CURRICULUM VITAE

Address (B): Plasma Application Group
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Citizenship: Australian

CAREER AMBITION

I would like to be part of an internationally recognised institution and establish myself in the field of materials science where I also believe that my skills and knowledge can make a significant contribution.

During my postgraduate studies into the development and characterisation of advanced coating materials, I have developed a strong interest in investigating and developing new materials which will improve existing materials in various applications. Since completing my PhD in 2004, I was awarded the ANZ Investment Bank fellowship which has provided me funding to Lawrence Berkeley Laboratory joining the Plasma Application Group to continue further research into advance plasma processing.

PROFESSIONAL MEMBERSHIP

- Member of the Australia Microscopy and Microanalysis Society Inc. (AMMS).

EDUCATION

Institution / dates	Qualification
RMIT University (1999–2003) (awarded 2004)	Doctor of Philosophy Titled “ <i>The characterisation and novel fabrication of TiN and TiAlN thin films</i> ”
RMIT University (1996-1998)	Bachelor of Applied Science (Applied Physics) (Distinction)

KEY SKILLS AND EXPERIENCE

- Highly experienced in the operation of various electron microscopes
- Highly experience TEM and SEM sample preparations
- Characterisation of thin films using other analytical techniques such as XPS, RBS and EDX, stress measurements, and UMIS nano-indentation hardness
- Lectured Physics and Laboratory demonstration at undergraduate levels.

ACHIEVEMENTS

- Awarded the ANZ Investment Bank Fellow by the American Australian Association. This provided the necessary funding for 12 months to undertake a research project at Lawrence Berkeley Laboratory.
- Authored and co-authored of eight referred publications in international journals.
- Personally presented at five international conferences including a keynote lecture at the “Eighth International Conference on Plasma Surface Engineering” in Garmisch-Partenkirchen, Germany in 2002.
- Departmental seminar at Microelectronics Division - Nanyang Technological University (Singapore) Plasma and Applied Group - University of Sydney (Australia) and Applied Physics - RMIT University (Australia)
- Invited for departmental seminar presentation at Electronic Materials Engineering (EME), Australian National University

RELEVANT WORK EXPERIENCE

Institution / dates	Position	Duties & achievements
Lawrence Berkeley Laboratory, USA (2003-present)	Guest Scientist	<ul style="list-style-type: none"> • Undertaken a project as specified in the AAA proposal. This includes: Film deposition using various PVD techniques Characterisation of the coatings • Maintenance of various deposition system and equipments
RMIT University Dept of Applied Physics, Aust (2001-2004)	Lecturer/Demonstrator	<ul style="list-style-type: none"> • Presented lectures and demonstrations to third Year “Laboratory Technique – Scanning Electron Microscopy”. • Assisted in supervision of Honour student project
RMIT University – Applied Physics Microscopy and Microanalysis, Aust (1999-2001)	Duty Microscopist	<ul style="list-style-type: none"> • Coordinated and presented training courses for Electron Microscopy and sample preparations • Assisted in the maintaining of Instruments in Laboratory • Aided users on microscopes and sample preparations • Developed database and administrated usage of electron microscopes in the facilities
Kodak (Australasia) Final year Industrial experience (1998) (3 weeks)	Research Assistant	<ul style="list-style-type: none"> • Undertook a project measuring the firmness of gelatine, which relates to the quality of the emulsion.

PERSONAL INTERESTS

Recreational activities include reading, tennis, squash.

PUBLICATIONS

1. **Characterisation of Cathodic arc deposited titanium aluminum nitride films prepared using plasma immersion ion implantation**
Journal of Physics.: Condensed Matter vol 17 pp2791-2800. 2005
S H N Lim, D G McCulloch, M M M Bilek, D R McKenzie, S P Russo, A S Barnard and A Torpy
2. **Electrical conductivity as a measure of the continuity of titanium and vanadium thin films**
Thin Solid Films vol 474, pp 341-345, Mar 2005
F.A Burgmann, S.H.N Lim, D.G. McCulloch, B.K. Gan, K.E. Davis, D.R. McKenzie, M.M.M Bilek
3. **Control of stress and microstructure in cathodic arc deposited films**
IEEE Transactions on Plasma Science 31 vol 5; pp 939-944 Part 1; Oct 2003
M.M.M. Bilek, R.N. Tarrant, D.R. McKenzie, S.H.N. Lim, D.G. McCulloch.
4. **Minimisation of intrinsic stress in titanium nitride using a cathodic arc with plasma immersion ion implantation.**

Surface & Coatings Technology vol 174-175C, pp 76-80, 2003
S. H. N. Lim, D. G. McCulloch, M. M. M. Bilek and D. R. McKenzie

5. **Voltage dependence of cluster size in carbon films using plasma immersion ion implantation**
Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, vol 206, pp 741-744, May 2003
D. R. McKenzie, R. N. Tarrant, M. M. M. Bilek, G. Pearce, N. A. Marks, D. G. McCulloch and S. H. N. Lim
6. **Relation between microstructure and stress in titanium nitride films grown by plasma immersion ion implantation**
Journal of Applied Physics vol 93, No 8, 17, pp 2483-2488, Jan 2003
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
7. **Wannier function analysis for understanding disordered structures generated using Car-Parrinello molecular dynamics**
Molecular Simulation 28 (10-11), pp 971-979 OCT-NOV 2002
Lim S.H.N., McCulloch DG, Merchant AR, Marks NA, Bilek MMM, McKenzie DR
8. **Plasma-based ion implantation utilising a cathodic arc plasma**
Surface & Coatings Technology 156 (1-3), pp136-142 JUL 1 2002
M.M.M. Bilek, D.R. McKenzie, R.N. Tarrant, S.H.M. Lim, D.G. McCulloch
9. **Characterisation of titanium nitride thin films prepared using PVD and a plasma immersion ion implantation system**
Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, Volume 190, Issues 1-4, pp 723-727, May 2002
S. H. N. Lim, D. G. McCulloch, S. Russo, M. M. M. Bilek and D. R. McKenzie

CONFERENCE PROCEEDINGS

1. 18th 17th Australia Conference for Microscopy and Microanalysis 2004 - Geelong, Australia
Oral presentation "***The relationship between hardness and microstructure of titanium nitride thin film***"
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
2. 7th Australia Microbeam Analysis Society Melbourne 2003 – Melbourne, Australia
Oral presentation "***The Dependence of preferred orientation with inbuilt stress in titanium nitride thin films***"
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
3. 20th International Symposium on Discharges and Electrical Insulation in Vacuum, 2002.
Oral presentation "***Control of stress and microstructure in cathodic arc deposited films***"
M.M.M. Bilek, R.N. Tarrant, D.R. McKenzie, S.H.N Lim, D.G. McCulloch.
4. 8th International Conference on Plasma Surface Engineering 2002, Garmisch-Partenkirchen, Germany
Key note lecture "***Microstructure and stress control for TiN films using cathodic arc and pulsed bias.***"
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
5. 15th International Congress on Electron Microscopy 2002 – Durban, South Africa
Oral presentation "***Microstructure and stress control for TiN films using cathodic arc and pulsed bias.***"
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
6. 17th Australia Conference for Electron Microscopy 2002 - Adalaide, Australia
Oral presentation "***The Effect of Intrinsic Stress on the Structure of TiN Thin Film Coatings***"
S.H.N Lim, D.G. McCulloch, M.M.M Bilek, D.R. Mckenzie
7. 15th International Conference Ion Beam Analysis 2001 – Cairns, Australia
Poster presentation "***Characterisation of TiN thin films prepared using PVD and a Plasma immersion ion implantation systems***"
S.H.N. Lim, D.G.McCulloch, M.M.M Bilek, S. Russo and D.R. McKenzie
8. The Sixth Australian Molecular Modelling Conference 2000 – Melbourne, Australia
poster presentation "***ab-initio Simulations of Light Element Binary and Ternary Alloys***"
D.G. McCulloch, D.R. McKenzie and S.H.N Lim